

LIST OF THE CLAIMS

1. (Currently Amended) A method for determining an auction format for a market, said method comprising the steps of:

selecting, performed by a computer system, characteristics of said market based at least in part on stored historical bids data that includes data for historical auctions performed in the past for a plurality of bidders, wherein said historical bids data is stored on computer readable medium that is accessed by said computer system;

selecting, performed by said computer system, a relevant bidding model that specifies past bidding behavior as a function of information held privately by a bidder, that is determined based at least in part on said historical auctions data, and said characteristics of said market based on segments of said historical auctions related to a specified item;

selecting, performed by said computer system, at least a first estimated structure of said market, which describes at least a first factor that affects how bidders behave, and a second estimated structure of said market, which describes a second factor that affects how bidders behave, at least in part by inverting said relevant bidding model;

predicting, performed by said computer system, a first bidding behavior utilizing said first estimated structure of said market, said characteristics of said market and said relevant bidding model;

predicting, performed by said computer system, a first outcome of said market based on said first bidding behavior;

predicting, performed by said computer system, at least a second bidding behavior utilizing at least said second estimated structure of said market, said characteristics of said market and said relevant bidding model;

predicting, performed by said computer system, a second outcome of said market based on at least said second bidding behavior prediction; and

determining, performed by said computer system, said auction format for said market by evaluating said first outcome of said market and at least said second outcome of said market.

2. (Previously Presented) The method as recited in Claim 1, wherein said selecting of said characteristics of said market step comprises the steps of:

- receiving a first user input, wherein said first user input comprises information identifying an item to be auctioned;
- accessing a database;
- retrieving said historical bids data from said database;
- retrieving from said database auction characteristics data, wherein said auction characteristics data comprise information relating to historical auctions of similar items;
- outputting said historical bids data; and
- outputting said auction characteristics data.

3. (Previously Presented) The method as recited in Claim 1, wherein said selecting of said relevant bidding model step comprises the steps of:

- receiving auction characteristics data;
- accessing a database;
- retrieving from said database said relevant bidding model, wherein said relevant bidding model is selected based on a corresponding relevance of said auction characteristics data; and
- outputting said relevant bidding model.

4. (Previously Presented) The method as recited in Claim 1, wherein said selecting of said first estimated structure of said market step comprises the steps of:

- receiving said relevant bidding model;
- receiving said historical bids data;

expressing unobservable variables in terms of observable bids, wherein said unobservable variables are expressed in terms of said observable bids by inverting said relevant bidding model;

transforming said historical bids data to a sample of inverted bids, wherein said historical bids data are transformed by inverting said relevant bidding model;

estimating an estimated latent structure of said market, wherein said sample of inverted bids receives application of statistical density estimation techniques to obtain said estimated latent structure of said market; and

outputting said estimated latent structure of said market.

5. (Previously Presented) The method as recited in Claim 1, wherein said relevant bidding model has embedded an unknown structure, and wherein said predicting of said first bidding behavior step comprises the steps of:

receiving said estimated structure of said market;

receiving said relevant bidding model;

substituting said unknown structure with said estimated structure of said market; and

outputting a prediction of bidding behavior.

6. (Previously Presented) The method as recited in Claim 1, wherein said predicting of said first outcome of said market step comprises the steps of:

receiving a second user input, wherein said second user input comprises:

an evaluation criterion;

a candidate auction format; and

a constraint;

receiving said first estimated structure of said market;

receiving said first bidding behavior prediction for said candidate auction format, wherein said first bidding behavior prediction further comprises a prediction under said constraint;

obtaining a value of said evaluation criterion, wherein said value is based on said first estimated structure of said market, said first bidding behavior

prediction, said candidate auction format, and said constraint, wherein said value comprising said first outcome of said market; and
outputting said value.

7. (Previously Presented) The method as recited in Claim 1, wherein said evaluating of said first outcome and at least said second outcome of said market of said market step comprises the steps of:

receiving a third user input, wherein said third user input comprises a plurality of candidate auction formats;
receiving a predicted outcome for each of said candidate auction formats;
calculating descriptive statistics for each of said candidate auction formats, wherein said descriptive statistics comprise a mean and a variance;
ranking each of said candidate auction formats with respect to said calculated mean and generating corresponding rankings for said plurality of candidate auction formats; and
outputting said descriptive statistics and said rankings.

8. (Previously Presented) The method as recited in Claim 7, wherein said evaluating said first outcome of said market and at least said second outcome of said market step further comprises the steps of:

selecting a best auction format, wherein said best auction format comprises the candidate auction format within said plurality of candidate auction formats having the highest of said rankings; and
outputting said best auction format.

9. (Currently Amended) A computer system comprising:
a processor for executing instructions;
a computer readable medium with said instructions stored thereon, wherein said instructions implement:
a market-characteristic-based-on-historical-auctions-selector configured for selecting characteristics of said market based at least in part on stored

historical bids data that includes data for historical auctions performed in the past for a plurality of bidders;

a relevant-bidding-model-selector-based-on-privately-held-bidder-information-and-based-on-segments-of-past-auctions configured for selecting a relevant bidding model that specifies past bidding behavior as a function of information held privately by a bidder, that is determined based at least in part on said past auctions data, and said characteristics of said market based on segments of said past auctions related to a specified item;

an estimated-structure-of-market-selector configured for selecting at least a first and a second estimated structure of said market, wherein said first estimated structure of said market describes at least a first factor that affects how bidders behave and wherein said second estimated structure of said market describes at least a second factor that affects how bidders behave;

a bidding-behavior-based-on-estimated-market-structure-predictor configured for predicting a first bidding behavior utilizing said first estimated structure of said market, said characteristics of said market and said relevant bidding model;

a market-outcome-based-on-bidding-behavior-predictor configured for predicting a first outcome of said market based on said first bidding behavior;

said bidding-behavior-based-on-estimated-market-structure-predictor configured for predicting at least a second bidding behavior utilizing at least said second estimated structure of said market, said characteristics of said market and said relevant bidding model;

said market-outcome-based-on-bidding-behavior-predictor configured for predicting a second outcome of said market based on at least said second bidding behavior prediction; and

a determiner-of-auction-format-based-on-evaluating-market-outcome configured for determining an auction format by evaluating said first outcome of said market and at least said second outcome of said market.

10. (Previously Presented) The system as recited in Claim 9, wherein said market-characteristic-based-on-historical-auctions-selector is further configured for:

- receiving a first user input, wherein said first user input comprises information identifying an item to be auctioned;
- accessing a database;
- retrieving from said database said historical bids data;
- retrieving from said database auction characteristics data, wherein said auction characteristics data comprise information relating to historical auctions of similar items;
- outputting said historical bids data; and
- outputting said auction characteristics data.

11. (Previously Presented) The system as recited in Claim 9, wherein said relevant-bidding-model-selector-based-on-privately-held-bidder-information-and-based-on-segments-of-past-auctions is further configured for:

- receiving auction characteristics data;
- accessing a database;
- retrieving from said database said relevant bidding model, wherein said relevant bidding model is selected based on a corresponding relevance of said auction characteristics data; and
- outputting said relevant bidding model.

12. (Previously Presented) The system as recited in Claim 9, wherein said estimated-structure-of-market-selector is further configured for:

- receiving said relevant bidding model;
- receiving said historical bids data;
- expressing unobservable variables in terms of observable bids, wherein said unobservable variables are expressed in terms of said observable bids by inverting said relevant bidding model;
- transforming said historical bids data to a sample of inverted bids, wherein said historical bids data are transformed by inverting said relevant bidding model;

estimating an estimated latent structure of said market, wherein said sample of inverted bids receives application of statistical density estimation techniques to obtain said estimated latent structure of said market; and
outputting said estimated latent structure of said market.

13. (Previously Presented) The system as recited in Claim 9, wherein said bidding model has embedded an unknown structure, and wherein said bidding-behavior-based-on-estimated-market-structure-predictor is further configured for:
 - receiving said estimated structure of said market;
 - receiving said relevant bidding model;
 - substituting said unknown structure with said estimated structure of said market; and
 - outputting a prediction of bidding behavior.

14. (Previously Presented) The system as recited in Claim 9, wherein said market-outcome-based-on-bidding-behavior-predictor is further configured for:
 - receiving a second user input, wherein said second user input comprises:
 - an evaluation criterion;
 - a candidate auction format; and
 - a constraint;
 - receiving said first estimated structure of said market;
 - receiving said first bidding behavior prediction for said candidate auction format, wherein said first bidding behavior prediction further comprises a prediction under said constraint;
 - obtaining a value of said evaluation criterion, wherein said value is based on said first estimated structure of said market, said first bidding behavior prediction, said candidate auction format, and said constraint, wherein said value comprising said first outcome of said market; and
 - outputting said value.

15. (Previously Presented) The system as recited in Claim 9, wherein said determiner-of-auction-format-based-on-evaluating-market-outcome is further configured for:

receiving a third user input, wherein said third user input comprises a plurality of candidate auction formats;

receiving a predicted outcome for each of said candidate auction formats;

calculating descriptive statistics for each of said candidate auction formats, wherein said descriptive statistics comprise a mean and a variance;

ranking each of said candidate auction formats with respect to said calculated mean and generating corresponding rankings for said plurality of candidate auction formats; and

outputting said descriptive statistics and said rankings.

16. (Previously Presented) The system as recited in Claim 15, wherein said determiner-of-auction-format-based-on-evaluating-market-outcome is further configured for:

selecting a best auction format, wherein said best auction format comprises the candidate auction format within said plurality of candidate auction formats having the highest of said rankings; and

outputting said best auction format.

17. (Previously Presented) A computer readable medium having stored thereon computer-executable instructions for causing a computer system to execute the steps in a method for determining an auction format for a market, said method comprising the steps of:

selecting characteristics of said market based at least in part on stored historical bids data that includes data for historical auctions performed in the past for a plurality of bidders;

selecting a relevant bidding model that specifies past bidding behavior as a function of information held privately by a bidder, that is determined based at least in

part on said historical auctions data, and said characteristics of said market based on segments of said historical auctions related to a specified item;

selecting at least a first estimated structure of said market, which describes at least a first factor that affects how bidders behave, and a second estimated structure of said market, which describes a second factor that affects how bidders behave, at least in part by inverting said relevant bidding model;

predicting a first bidding behavior utilizing said first estimated structure of said market, said characteristics of said market and said relevant bidding model;

predicting a first outcome of said market based on said first bidding behavior;

predicting at least a second bidding behavior utilizing at least said second estimated structure of said market, said characteristics of said market and said relevant bidding model;

predicting a second outcome of said market based on at least said second bidding behavior prediction; and

determining said auction format for said market by evaluating said first outcome of said market and at least said second outcome of said market.

18. (Previously Presented) The computer readable medium as recited in Claim 17, wherein said selecting of said characteristics of said market step comprises the steps of:

receiving a first user input, wherein said first user input comprises information identifying an item to be auctioned;
accessing a database;
retrieving from said database said historical bids data;
retrieving from said database auction characteristics data, wherein said auction characteristics data comprise information relating to historical auctions of similar items;
outputting said historical bids data; and
outputting said auction characteristics data.

19. (Previously Presented) The computer readable medium as recited in Claim 17, wherein said selecting of said relevant bidding model step comprises the steps of:

- receiving auction characteristics data;
- accessing a database;
- retrieving from said database said relevant bidding model, wherein said relevant bidding model is selected based on a corresponding relevance of said auction characteristics data; and
- outputting said relevant bidding model.

20. (Previously Presented) The computer readable medium as recited in Claim 17, wherein said selecting of said first estimated structure of said market step comprises the steps of:

- receiving said relevant bidding model;
- receiving said historical bids data;
- expressing unobservable variables in terms of observable bids, wherein said unobservable variables are expressed in terms of said observable bids by inverting said relevant bidding model;
- transforming said historical bids data to a sample of inverted bids, wherein said historical bids data are transformed by inverting said relevant bidding model;
- estimating an estimated latent structure of said market, wherein said sample of inverted bids receives application of statistical density estimation techniques to obtain said estimated latent structure of said market; and
- outputting said estimated latent structure of said market.

21. (Previously Presented) The computer readable medium as recited in Claim 17, wherein said relevant bidding model has embedded an unknown structure, and wherein said predicting of said first bidding behavior step comprises the steps of:

- receiving said estimated structure of said market;
- receiving said relevant bidding model;

substituting said unknown structure with said estimated structure of said market; and

outputting a prediction of bidding behavior.

22. (Previously Presented) The computer readable medium as recited in Claim 17, wherein said predicting of said first outcome of said market step comprises the steps of:

receiving a second user input, wherein said second user input comprises:
an evaluation criterion;
a candidate auction format; and
a constraint;

receiving said first estimated structure of said market;

receiving said first bidding behavior prediction for said candidate auction format, wherein said first bidding behavior prediction further comprises a prediction under said constraint;

obtaining a value of said evaluation criterion, wherein said value is based on said first estimated structure of said market, said first bidding behavior prediction, said candidate auction format, and said constraint, wherein said value comprising said first outcome of said market; and

outputting said value.

23. (Previously Presented) The computer readable medium as recited in Claim 17, wherein said evaluating of said first outcome and at least said second outcome of said market of said market step comprises the steps of:

receiving a third user input, wherein said third user input comprises a plurality of candidate auction formats;

receiving a predicted outcome for each of said candidate auction formats;

calculating descriptive statistics for each of said candidate auction formats, wherein said descriptive statistics comprise a mean and a variance;

ranking each of said candidate auction formats with respect to said calculated mean and generating corresponding rankings for said plurality of candidate auction formats; and
outputting said descriptive statistics and said rankings.

24. (Previously Presented) The computer readable medium as recited in Claim 23, wherein said evaluating said first outcome of said market and at least said second outcome of said market step further comprises the steps of:

selecting a best auction format, wherein said best auction format comprises the candidate auction format within said plurality of candidate auction formats having the highest of said rankings; and
outputting said best auction format.